NEW

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE: IL | 02 SITE NUMBER: 3890008946

II. SITE NAME AND LOCATION

01 SITE NAME	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Argonne National Laboratory-Illinois (ANL-IP) 800 Area Landfill--French Drain	9700 South Cass Avenue

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG. DIST
Argonne	IL	60439	DuPage	043	13

09 COORDINATES LATITUDE	LONGITUDE
41° 42' 47.0"	087° 59' 45.0"

10 DIRECTIONS TO SITE: From I-55, exit south on Cass Ave. Turn west on Northgate Road and enter facility. Continue on Northgate Road, turn west on Inner Circle. Continue straight and road becomes Westgate Road. Turn south on Kearney Road, continue*

III. RESPONSIBLE PARTIES

01 OWNER	02 STREET
U.S. Department of Energy (DOE-CH)	9800 South Cass Avenue

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER	
Argonne	IL	60439	(312) 972-2271	

07 OPERATOR	08 STREET
Argonne National Laboratory	9700 South Cass Avenue

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER	
Argonne	IL	60439	(312) 972-3998	Aubrey Smith, Envir. Compliance Officer

13 TYPE OF OWNERSHIP (Check one)
☐ A. PRIVATE ☒ B. FEDERAL Dept. of Energy (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: / / (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: / / (MONTH DAY YEAR) ☒ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES DATE 11 / 30 / 87 (MONTH DAY YEAR) IEPA ☐ NO Inspections conducted monthly to quarterly
BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☒ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☒ F. OTHER DOE-CH (Specify)
CONTRACTOR NAME(S) DuPage County Public Works Department

02 SITE STATUS	03 YEARS OF OPERATION	
☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN	1969 (BEGINNING YEAR)	1978 ** (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED: From 1969 through 1978, non-radioactive toxic wastes were disposed in the French Drain. Reportable quantities of acetone, carbon tetrachloride, dimethyl sulfoxide, perchloroethylene, chloroform and trichlorobenzene plus waste oil, diesel fuel, kerosene and PCB's, were poured into the French Drains *

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION: The greatest potential hazard resulting from this site appears to be the potential for ground water contamination. Ground water monitoring wells were installed in and around the landfill in 1979, and they have been sampled and monitored regularly. The potential for exposure by contact with leachate, *

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed; complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Barry Fritz	DOE-CH, Operational & Envir. Safety Division	(312) 972-2271

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
C. L. Cheever	DOE	ANL-IL	(312) 972-3311	03 / 24 / 88 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

* See Continuation Sheet

** The French Drains were closed in 1978. The Sanitary Landfill is still active.

CONTINUATION SHEET

Part 1 - Site Information and Assessment

ANL-IL IL 3890008946

800 Area Landfill--French Drain

Directions to Site:

about 1,000 feet. The landfill is located approximately 1,200 feet west of Kearney and extends to the facility's west border. The French Drains were located in the northeast portion of the landfill.

Description of Substances Possibly Present, Known, or Alleged:

(vertical corrugated-metal conduit pipes, partially filled with stones) located in the northeast quadrant of the landfill.

Description of Potential Hazard to Environment and/or Population:

inhalation of air contaminants, or ingestion of contaminated vegetation, animals or surface water is considered to be negligible. The ANL-IL facility is controlled by a security fence and a continuous onsite security force.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IL	3890008946

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

☐ A. SOLID ☐ E. SLURRY
☐ B. POWDER, FINES ☒ F. LIQUID
☐ C. SLUDGE ☐ G. GAS
☐ D. OTHER _____ (Specify)

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

Gallons 29,000
CUBIC YARDS _____
NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

☒ A. TOXIC ☒ E. SOLUBLE ☐ I. HIGHLY VOLATILE
☒ B. CORROSIVE ☐ F. INFECTIOUS ☐ J. EXPLOSIVE
☐ C. RADIOACTIVE ☒ G. FLAMMABLE ☐ K. REACTIVE
☒ D. PERSISTENT ☐ H. IGNITABLE ☐ L. INCOMPATIBLE
☐ M. NOT APPLICABLE

III. WASTE TYPE Ref (2) p. 24, Ref (3) and Ref (6)

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE	15,200	gallons	Waste oil, diesel fuel, *
SOL	SOLVENTS	1,050	gallons	Acetone
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	1,333	gallons	Carbon Tetrachloride, chloroform,*
IOC	INORGANIC CHEMICALS			
ACD	ACIDS	1,210	gallons	Ferric chloride
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS numbers) Groundwater Monitoring Well Samples, 1986.

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	Benzene	71-43-2	Landfill/French Drain	<5	microgram/L
OCC	Ethylbenzene	100-41-4	Landfill/French Drain	<5	microgram/L
OCC	o-Dichlorobenzene	95-50-1	Landfill/French Drain	<5	microgram/L
OCC	Perchloroethylene	127-18-4	Landfill/French Drain	<10	microgram/L
OCC	Toluene	108-88-3	Landfill/French Drain	<5	microgram/L
OCC	Trichloroethylene	79-01-6	Landfill/French Drain	<10	microgram/L
MES	Barium	7440-39-3	Landfill/French Drain	157	microgram/L
IOC	Chloride	999	Landfill/French Drain	31	microgram/L
MES	Iron	7439-89-6	Landfill/French Drain	224	microgram/L
MES	Manganese	7439-96-5	Landfill/French Drain	340	microgram/L
IOC	Sulfate	999	Landfill/French Drain	146	microgram/L
					L=liter

V. FEEDSTOCKS (See Appendix for CAS numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sampling results)

(1) 1986 Annual Site Environmental Report for Argonne National Laboratory (Report #ANL-87-9) by N. Golchert and T. Duffy.
(2) Phase I CERCLA Program, ANL-IL Installation Assessment Report (required by DOE order 5480.14), July 1986.
(3) 1988 Inventory of Federal Hazardous Waste Activities (for ANL-IL).

EPA FORM 2070-12 (7-81)

* See Continuation Sheet

CONTINUATION SHEET

Part 2 - Waste Information

ANL-IL IL 3890008946

800 Landfill--French Drain

Waste Type:

Category	Comments
OLW	hydraulic oil
OCC	PCB's

Hazardous Substances:

(Ref. (1) p. 85 and 91.)

Sources of Information:

(4) Environmental Assessment Related to the Operation of Argonne National Laboratory (DOE/EA-0181), August 1982.

(8) Letter to U.S. EPA Region V, dated July 7, 1980; Attachment: List of disposed chemicals.

(9) Application for Permit to Develop and/or Operate a Solid Waste Management Site; report by Soil Testing Services, Inc., for ANL-IL, August 4, 1980.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IL	3890008946

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 34,000 — 04 NARRATIVE DESCRIPTION

The potential for contamination of the Niagaran aquifer (the underground potable well water supply) by toxic wastes disposed in the 800 area landfill does exist. The clay soil at this location shows a water permeation rate of $1x10^{-8}$ to $8x10^{-8}$ *

01 [X] B. SURFACE WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 — 04 NARRATIVE DESCRIPTION

The potential for surface water contamination does exist. A drainage ditch runs southward along the west side of the landfill and then curves and runs eastward, south of the landfill. This drainage ditch joins Freund Brook which drains most of the interior portions of the ANL-IL site and empties into Sawmill Creek which runs *

01 [X] C. CONTAMINATION OF AIR — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 — 04 NARRATIVE DESCRIPTION

The portion of the landfill where the French Drains were located has been covered with a clay cap which is several feet thick, so the potential for air contamination is essentially non-existent. To date, no air monitoring studies have been conducted specifically on the landfill French Drain area.

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [X] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 50 employees — 04 NARRATIVE DESCRIPTION

The potential for direct contact with hazardous materials at the 800 area landfill is minimal. The entire ANL-IL site is controlled by a security fence and a continuous onsite security force. The greatest potential for direct contact exposure exists for the employees who maintain or regularly dispose of wastes at the landfill*

01 [X] F. CONTAMINATION OF SOIL — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED: 22 acres (ACRES) — 04 NARRATIVE DESCRIPTION

Soil in the landfill was contaminated with the hazardous substances which were disposed in the French Drain located in the landfill.

01 [X] G. DRINKING WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 34,000 in 3 miles — 04 NARRATIVE DESCRIPTION

In the vicinity of ANL-IL, only subsurface water (from both shallow and deep aquifers) and Lake Michigan water are used for drinking purposes. The potential for contamination of groundwater used for drinking purposes does exist. Two principal aquifers are used as water supplies in the vicinity of ANL-IL. The upper aquifer is the *

01 [X] H. WORKER EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED: 50 — 04 NARRATIVE DESCRIPTION

The potential for worker exposure to hazardous substances disposed in the landfill French Drain is negligible for employees who maintain or regularly dispose of wastes at the landfill or who monitor environmental conditions at the landfill. The clay cap over the French Drain provides a barrier.

01 [ ] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

* See Continuation Sheet

CONTINUATION SHEET

Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL IL 3890008946

800 Area Landfill--French Drain

Groundwater Contamination:

cm/sec (or .125 to 1 inch per year). Groundwater monitoring wells have been monitored regularly since 1979. Studies of monitoring well data have shown that a perched water condition exists in the landfill, at a depth varying from 20 ft. on the north side to 25 ft. on the south side. This is caused by the relatively impermeable condition of the underlying clay which restricts downward water flow. The studies also indicate that water in the test wells is from surface infiltration and it moves horizontally approximately 25 ft. below the surface. Penetration to the aquifer used for water supplies, 50-100 ft. below the surface is very slow. (Ref. (2) p. 6, 23-26, Ref. (1) p. 8, 71-91). Population = 3,000 employees + 31,000 residents within 3 miles.

Surface Water Contamination:

offsite near the southeast corner of the site. Water samples from the drainage ditch have not indicated that contamination has occurred. Surface water in the immediate area is not used for drinking water or recreational purposes. (Ref. (4) p. 2-44, Ref. (2) p. 15)

Direct Contact:

or who monitor environmental conditions at the landfill.

Drinking Water Contamination:

Niagaran-Alexandrian dolomite which is about 200 ft. thick in the ANL-IL area, and has a piezometric surface between 50 and 100 ft. below the ground surface. The lower aquifer is the Galesville sandstone, which lies between 490 and 1,500 ft. below the surface. Maquoketa Shale separates the aquifers and retards hydraulic connection between the aquifers. The four domestic water wells now in use at ANL-IL are about 300 ft. deep in the Niagaran dolomite. All four wells are located east of the landfill, and are at least 7,000 ft. from the landfill. The topography of the area and hydrological investigations have indicated that groundwater flows to the south. (Ref. (1) p. 8, 12, Ref. (7) p. 25, Ref. (2) p. 6.)

The distance from the site to the nearest well is between 2,001 ft. and 1 mile, and the population served is 101-1,000 people. (Ref. (2) Attachment 1.)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IL	3890008946

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 X J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION
The potential for damage to flora only exists for flora in the immediate vicinity of the French Drains.

01 X K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)
The potential for damage to fauna would be ingestion of leachate water. Wildlife does wander freely at ANL-IL. There is a clay cap more than 2 feet thick over the French Drain area and this provides a protection barrier for local fauna. There *

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
(Spills, runoff, standing liquids, leaking drums)
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 34,000 (3,000 employees + 31,000 residents in 3 miles)

IV. COMMENTS

Deep groundwater monitoring wells are to be installed at the landfill to determine if contaminants are reaching the drinking water aquifer.

Soil and water samples should be collected and analyzed for organic, inorganic and *

V. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

(1) 1986 Annual Site Environmental Report for Argonne National Laboratory (Report #ANL-87-9) by N. Golchert and T. Duffy.
(2) Phase I CERCLA Program, ANL-IL Installation Assessment Report (required by DOE order 5480.14), July 1986.

EPA Form 2070-12 (7-81)

* See Continuation Sheet

CONTINUATION SHEET

Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL **IL 3890008946**

800 Area Landfill--French Drain

Damage to Fauna:

has been no observed fauna damage to date.

Total Population Potentially Affected:

(Ref. (1) p. 8.)

Comments:

priority pollutant contaminants.

Sources of Information:

(3) 1988 Inventory of Federal Hazardous Waste Activities (for ANL-IL).

(4) Environmental Assessment Related to the Operation of Argonne National Laboratory (DOE/EA-0181), August 1982.

(6) Site Plan (ANL-IL Map), January 9, 1986.

(7) ANL Map with PA legend, April 1988.

(8) Letter to U.S. EPA Region V, dated July 7, 1980; Attachment: List of disposed chemicals.

(9) Application for Permit to Develop and/or Operate a Solid Waste Management Site; report by Soil Testing Services, Inc., for ANL-IL, August 4, 1980.

Summary Report for Preliminary Assessment of the ANL-IL

800 Area Landfill - French Drain

4/13/88

The 800 Area Landfill French Drain has been closed since 1979 and a clay cap has been placed over it. The detailed records of disposal of liquids show that toxic and persistent chemicals were put into the French Drain over a period of ten years. The ANL-IL environmental monitoring has not indicated a problem of migration of the toxic materials into peripheral monitoring wells. There are currently 14 monitoring wells for this site.

Recommendations: (1) Install and monitor two deep wells at this site to complement the shallow monitoring wells.

(2) Complete a Site Inspection (SI).

Reference 1

Dated 28, 707-38

05

JUL 7 1980

Mr. Hak Cho
U. S. Environmental Protection Agency
Region V
5AHMD/WMB/HWS
230 South Dearborn
Chicago, Illinois 60604

Dear Mr. Cho:

ARGONNE NATIONAL LABORATORY'S (ANL) DRY WELL

Please find enclosed a list of substances disposed of in the dry well at the ANL landfill as requested. The dry well consisted of a three meter long corrugated galvanized steel pipe, 46 cm in diameter placed upright into the soil located in the northwest corner of the landfill. A layer of rocks was placed in the bottom of the dry well to encourage evaporation of organics. The disposal of substances in the dry well occurred from January of 1969 to December of 1978. The use of the dry well was discontinued when its operation became known to the Operational and Environmental Safety Division of DOE-Chicago Operations and Regional Office. Nonflammable solvents and waste oil which would have previously been disposed of in the dry well are currently being recycled. The remainder of the substances are disposed of in a properly licensed landfill. The enclosed list covers the operational history of the dry well. The information was assembled from disposal records kept by the Reclamation Services Group at ANL. The concentration and chemical form of many of the substances was not recorded at the time of disposal and is unknown and not ascertainable. However, the concentrations would be characteristic of a research facility rather than a commercial or production facility.

As you will note, waste oil accounts for a large portion of the materials disposed of in the dry well. The majority of waste oil came from the motor pool area and is believed to have been crankcase oil.

CON.
RTG. S
INITIALS/SIG.
DATE
RTG. SYMBOL
INITIALS/SIG.
DATE
RTG. SYMBOL
INITIALS/SIG.
DATE
RTG. SYMBOL
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RTG. SYMBOL
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RTG. SYMBOL
INITIALS/SIG.
DATE

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0500-5C

Mr. Hak Cho - 2 - JUL 7 1980

10-5C

Attached to the list is a glossary defining many of the substances disposed of in the dry well. This information has also been sent to Ken Bechely of the Illinois Environmental Protection Agency. Please contact Dr. Paul Kearns on 312-972-2253, if additional information is needed or if there are any questions on this matter.

Sincerely,

Original Signed by
Fred G. Mattmueller

Robert H. Bauer
Manager/Regional Representative

Enclosures:
1. Types and Quantities of Chemicals Disposed of in ANL's Landfill Drain 1969-1979
2. Glossary

bc: OM, w/o encls.

CONCURRENCE	
RTG. SYMBOL	OES
INITIALS/SIG.	Kearns/
DATE	7/3/80
RTG. SYMBOL	OES
INITIALS/SIG.	Mayes
DATE	7/7/8
RTG. SYMBOL	OES
INITIALS/SIG.	Nelsen
DATE	7/ /80
RTG. SYMBOL	OES
INITIALS/SIG.	Sloan
DATE	7/7/8
RTG. SYMBOL	AMPTA
INITIALS/SIG.	Frey
DATE	7/7/80
RTG. SYMBOL	OM
INITIALS/SIG.	Mattmueller
DATE	7/ /80
RTG. SYMBOL	OM
INITIALS/SIG.	Baker
DATE	7/7/80

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-79

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TYPES AND QUANTITIES OF CHEMICALS DIPOSED OF IN ANL'S LANDFILL DRAIN 1969-1979

YEAR 1969 (Total - 1,517.57 gallons)

MATERIAL	AMOUNT (gallons)
acetic anhydride	0.13
acetone	6.00
amylacetate	0.13
AZ developer	1.00
AZ remover	0.25
1-butanol	0.50
butyl acetate	0.50
n-butylbromide	0.75
n-butylphthalate	0.25
chloroform	1.00
decahydronapthalene	0.25
dioxane	0.33
enthone inhibitor	0.38
ethyl acetate	0.50
ethylene dichloride	0.13
ferric chloride	2.00
formaldehyde	1.00
freon	0.75
gas absorbent	0.13
glycerol	0.11
isoamylacetate	0.25
methylnapthalene	0.25
neutra-clean	1.00
oxosolbent	0.07
n-proplyacetate	0.25

MATERIAL	AMOUNT (gallons)
Karl Fischer reagent	0.06
stripper	1.00
1,2,3,4-tetrahydronapthalene	2.00
toluene	0.11
turpentine	0.13
waste oil	896.40
water (organic matter)	600.00

YEAR 1970 (Total - 1062.55 gallons)

MATERIAL	AMOUNT (gallons)
acetone	55.00
carbon tetrachloride	1.50
diesel fuel	140.00
ethanol	0.03
ethyl acetate	0.25
organic solvents	90.00
skydrol (hydraulic oil)	160.00
waste oil	615.25

YEAR 1971 (Total - 4,682.00 gallons)

MATERIAL	AMOUNT (gallons)
acetate	0.01
acetone	126.62
acetylene tetra	5.00
alliphatic hydrocarbons	0.78
aluminum nitrate	15.00
2-ammino ethanol	0.26

MATERIAL	AMOUNT (gallons)
amyl acetate	10.03
amyl alcohol	6.25
aromatic hydrocarbons	0.26
benzene	6.84
bromobenzene	1.13
butanediol	0.13
butanol	0.05
1-butanol	0.25
butyl acetate	0.26
butyl alcohol	1.25
carbon disulfide	0.50
carbon tetrachloride	5.33
chlorobenzene	0.25
chlorobutane	0.25
chloroethene	12.00
chloroform	4.27
concentrex	2.00
concentrix buffer	0.25
cyclohexane	2.11
cyclohexanone	0.08
dichlorobenzene	0.75
diethyl ether	0.11
diethylbenzene	1.00
dimethylbutane	1.00
dimethyl sulfoxide	134.00
dioxane	0.51

MATERIAL	AMOUNT (gallons)
epoxy ingredients	6.00
ether	11.38
ethyl acetate	0.25
ethyl alcohol	0.31
ethyl ether	1.83
ethylene dichloride	0.50
ethylene glycol	4.57
ferric chloride	295.25
fluorobenzine	0.25
formaldehyde	42.55
formamide	0.25
freon	0.25
glycerine	1.03
glycerol	1.88
heptane	12.00
iso-pentane	0.38
isoamyl acetate	0.03
isobutyl alcohol	0.25
isoprene	0.50
isopropyl alcohol	1.66
isopropyl ether	0.25
kerosene	187.00
machine coolant	1110.00
methanol	1.00
methyl acetate	0.19
methyl alcohol	1.00

MATERIAL	AMOUNT (gallons)
methyl cellosolve	10.00
octane	0.25
organic solvents	2.00
pentane	1.00
perchloroethylene	100.00
propanol	1.00
2-propanol	0.25
propylene	1.00
propylene glycol	0.50
pyridine	0.23
skydrol	165.00
sodium carbonate	5.00
tetraethylene glycol	0.50
tinning solvent	4.00
toluene	3.55
tributylphosphate (TBP)	3.00
trichlorethylene	66.46
trichlorotoluene	1.00
triethylbenzene	2.00
trifluorochlore ethane	0.25
turpentine	0.50
waste oil	2017.89
wet edge	110.00
xylene	6.51
xylol	0.51

YEAR 1972 (Total - 2,788.34 gallons)

MATERIAL	AMOUNT (gallons)
acetone	105.00
alcohol	15.00
amyl acetate	0.25
benzene	34.75
bromobenzene	0.48
butyl alcohol	1.26
n-butylborate	0.25
carbon disulfide	0.75
carbon tetrachloride	2.00
chlorobutane	0.75
chloroform	1.25
dimethyl sulfoxide	41.00
dioxane	2.20
ether	7.45
ethyl acetate	1.26
ethyl ether	1.00
ethylene dichloride	1.00
ethylene glycol	2.63
ferric chloride	190.00
film fixer	0.25
formaldehyde	1.05
gasoline	1.26
glycerin	10.36
glycerol	1.25
heptane	17.50

MATERIAL	AMOUNT (gallons)
hexachlorpropene	0.38
hexachloropropylene	0.25
hexane	0.07
iso-amyl acetate	0.25
kerosene	0.50
Kodak developer	0.75
Kodak fixer	0.25
machine coolant	970.00
methyl cellosolve	1.00
methylcyclohane	4.75
methyl ethyl ketone	1.00
plastics	14.00
quick fix	1.25
Skydrol (hydraulic oil)	215.00
sodium hypochlorite	0.13
sodium sulfite	0.25
stripper 77	1.00
Sylgard-51	0.50
toluene	5.71
trichorethylene	30.83
waste oil	992.06
wet edge	85.00
xylene	2.90
zinc bromide	12.00

YEAR 1973 (Total - 4,003.41 gallons)

MATERIAL	AMOUNT (gallons)
acetone	13.55
alcohol	5.50
amyl acetate	0.06
amyl alcohol	0.25
amyl ether	1.00
benzene	4.42
butanol	0.18
butyl alcohol	0.50
butyl ether	0.25
carbon disulfide	0.25
carbon tetrachloride	2.53
chloroform	2.13
cleaning solution	0.35
diethyl ether	1.25
dimethyl sulfoxide	18.00
dioxane	4.71
1,2-ethandithial	0.05
ethanol	5.05
ether	3.65
ethyl acetate	1.50
ethyl alcohol	5.00
ethyl ether	1.52
ethylene chlorine	1.00
ethylene dichloride	0.13
ferric chloride	445.00
formaldehyde	2.50

MATERIAL	AMOUNT (gallons)
glycerin	0.75
hexane	0.58
iso-amyl alcohol	0.07
iso-octane	0.79
isopropanol	0.32
isopropyl alcohol	0.13
isopropyl ether	0.06
kerosene	150.25
machine coolant	535.00
methanol	1.11
perchloroethylene	130.00
propanol	3.00
n-propyl alcohol	5.00
pydraul	300.00
skydrol (hydraulic oil)	104.00
3M solvent	0.13
toluene	0.33
trichlorobenzene	110.00
trichlorethylene	51.88
waste oil	305.00
wet edge	110.00
xylene	1.29

YEAR 1974 (Total - 3,176.93 gallons)

MATERIAL	AMOUNT (gallons)
acetone	72.13
alcohol	1.00
amyl acetate	0.36
benzene	8.46
benzyl benzoate	5.25
bromobenzene	0.50
butanol	2.13
butyl acetate	0.44
butyl alcohol	1.32
carbon tetrachloride	3.38
chlorobenzene	0.75
chlorobutane	0.25
chloroform	0.38
cyclohexane	0.14
chlorothene	1.00
dichlorodiethyl	0.68
dichlorodiethyl ether	0.13
diethylene glycol	0.37
ether	10.71
ethyl acetate	0.11
ethylene acetate	0.25
ethylenediamine	0.78
ethylene glycol	7.29
ferric chloride	275.00
formaldehyde	1.00

MATERIAL	AMOUNT (gallons)
freon	0.25
glycerol	1.50
hexane	12.11
iso-amyl acetate	0.44
isopropyl alcohol	0.19
isopropyl ether	0.50
kerosene	3.00
machine coolant	600.00
manganese sulfate	55.00
methallyl alcohol	10.00
methyl alcohol	2.38
methylene chloride	0.07
methyl ethyl ketone	0.13
2-methyl-1-propanol	2.00
organic solvent	75.00
pentane	8.00
propyl alcohol	1.00
pyridine	0.38
tert-butyl benzene	0.05
thinner	0.25
toluene	2.76
trichlorethylene	16.53
triethanolamine	0.50
triethylamine	0.50
waste oil	315.13
wet edge	1000.00
xylene	1.36

YEAR 1975 (Total - 3,273.07 gallons)

MATERIAL	AMOUNT (gallons)
acetone	10.75
alcohol	53.00
ammonia	0.11
benzene	25.25
boron trifluoride	0.26
bromethyl benzene	0.01
bromobenzene	0.50
butanedithiol	0.01
butanol	1.06
butyl ether	0.13
butyl methacrylate	1.00
carbon tetrachloride	10.63
chlorobenzene	0.08
chloroform	0.13
chlorothene	2.00
cylohexane	5.00
detergent	5.28
dichloroethyl ether	0.75
diethyl ether	0.26
dimethyl formamide	0.11
dioxane	0.87
diverstrip (epoxy stripper)	0.25
ethanethiol	0.13
ether	13.84
ethyl acetate	1.25

MATERIAL	AMOUNT (gallons)
ethyl alcohol	3.50
ethylmethacrylate	1.00
freon	3.25
glycerol	0.25
glycol	0.25
heptane	5.00
hexyl ether	1.00
isopropyl alcohol	0.25
isopropyl ether	0.25
kerosene	55.25
machine coolant	1800.00
mercaptoethanol	0.11
methanol	13.26
methyl chloride	0.75
methylene chloride	0.25
methylcyclohexane	5.00
methoxy styrene	0.01
organic solvents	0.25
paint remover	2.00
peroxide	0.50
phenol	5.00
pyridine	0.36
skydrol (hydraulic oil)	460.00
sodium azide	30.00
sodium bicarbonate	10.00
stripper	8.00

MATERIAL	AMOUNT (gallons)
teflon	3.00
thinner	0.25
toluene	0.25
trichlorobenzene	30.00
trichlorethylene	7.50
waste oil	665.10
wet edge	55.00

YEAR 1976 (Total - 1,996.62 gallons)

MATERIAL	AMOUNT (gallons)
acetone	48.25
alcohol	20.00
benzene	36.62
bromobenzene	0.12
butanol	4.00
butanone	0.25
butyl acetate	0.35
butyl alcohol	2.00
cadmium	20.00
carbon tetrachloride	90.34
chloroethene	3.00
chloroform	22.38
collodion	0.25
coolanol	1.25
diethyl ether	0.53
dioxane	2.11
ethanol	2.00

MATERIAL	AMOUNT (gallons)
ether	26.06
ethyl alcohol	2.15
ethyl ether	0.87
ethylene glycol	0.10
formaldehyde	1.00
freon	10.00
glycerine	1.00
glycerol	0.32
hydrogen peroxide	0.25
isopropanol	2.06
isopropyl alcohol	0.50
isopropyl benzene	5.00
isopropyl ether	0.67
ligroin	0.25
machine coolant	850.00
2-mercaptoethanol	0.25
methacrylate	1.00
methanol	6.67
monochlorobenzene	25.00
organic solvents	13.00
orosene	1.00
paint solvent	0.25
perchlore	30.00
propylene	0.13
pyridine	1.07
skydrol (hydraulic oil)	15.00

MATERIAL	AMOUNT (gallons)
sodium azide	93.01
tetrabromoethane	5.00
tetramethylenediamine	0.25
toluene	1.62
trichlorethylene	35.39
triethylenetramine	0.11
waste oil	366.75
wax	300.00
wet edge	10.00
xylene	0.07

YEAR 1977 (Total - 3,413.15 gallons)

MATERIAL	AMOUNT (gallons)
acetone	239.96
acetonitrite	1.00
alcohol	25.25
amyl acetate	0.25
anti-scratch hardener	0.25
askarel (used transformer dielectric)	110.00
benzene	10.99
bromobenzene	0.25
butanol	4.25
butyl acetate	0.25
butyl alcohol	1.44
carbon disulfide	0.13

MATERIAL	AMOUNT (gallons)
carbon tetrachloride	305.26
chlorobenzene	0.11
chloroform	14.42
cleaning solution	3.50
cyclohexane	8.22
cyclopentadiene	0.03
3,3,diaminodipropylamine	0.13
diethyl ether	5.13
diisopropylbenzene	0.75
diisopropyl ketone	0.25
n,n,-dimethyl formamide	1.53
2,5-dimethyl hexadiene	1.00
dimethyl sulfoxide	1.65
dioxane	0.25
eosin	0.25
ethanol	5.00
ether	6.75
ethoxyethanol	1.00
ethyl alcohol	26.00
ethyl benzene	3.00
ethyl ether	5.00
ethyl hexanol	2.00
ethylene diamomine	0.13
ethylene glycol	0.25
5-ethyl-2-methylpyridine	1.00
ethyl propionate	0.26

MATERIAL	AMOUNT (gallons)
formaldehyde	1.25
glycerol	1.13
hardener	0.25
hydrogen peroxide	5.00
iso-amyl alcohol	0.11
isopropyl alcohol	1.25
isopropyl benzene	0.25
isopropyl ether	0.43
liquid fix	0.25
liquid scintillator	300.00
machine coolant	680.00
methanol	5.25
methyl alcohol	10.25
methylcyclohexane	0.13
methyl ethyl ketone	0.25
napthalene	0.26
nitrobenzene	0.05
photo developer	20.00
platinum paper developer	0.25
pyridine	0.75
quick fix	0.25
scintillator fluid	4.50
sodium azide	37.00
styrene	0.26
tetrachloroethylene	1.75
toluene	15.25

MATERIAL	AMOUNT (gallons)
toner	0.25
trichloroethane	2.00
trichlorethylene	5.90
2-tridecanone	1.00
2,2,4-trimethyl-1-pentanol	5.00
versatol developer	0.25
waste oil	1522.75
wetting solution	0.25
xylene	5.00

YEAR 1978 (Total - 2,793.74 gallons)

MATERIAL	AMOUNT (gallons)
acetone	381.53
acetonitrite	1.00
alcohol	1.00
benzene	41.34
calgon	55.00
carbon disulfide	2.56
carbon tetrachloride	195.75
chlorobenzene	0.50
chloroethene	2.26
chloroform	21.19
cleaning solvent	3.00
dimethyl ether	0.50
dioxane	5.03

MATERIAL	AMOUNT (gallons)
ethanol	3.00
ether	1.09
ethyl acetate	2.00
ethyl chloride	0.03
formaldehyde	1.82
hexane	2.00
hydrochloric acid (conc)	0.50
isopropyl ether	2.00
methanol	6.48
methylene chloride	4.00
nitric acid	8.00
nitrobenzene	0.30
perfluorohexane	0.25
toluene	5.25
trichlorethylene	1.70
waste oil	844.44
wet edge	1000.00
xylene	0.13

GLOSSARY

1. Anti-Scratch hardener: Possibly aluminum sulfate 39%, acetic acid 65%, water 54.5%

2. A Z Developer: Photographic Developer

3. A Z Remover: Possible photographic fixer bath

4. Calgon: One of many Calgon products

5. Carbon Chloride: Carbon Dichloride (Cl_2CCCl_2)

6. Cleaning Solvent: Normally a halogenated hydrocarbon

7. Concentrex, Concentrex buffer: Unknown

8. Coolanol: A coolant-dielectric fluid for electronic equipment

9. Diverstrip: Possibly Diver's Liquid, a liquid formed by absorbing ammonia in solid ammonia nitrate

10. Film Fixer: Photographic fixing bath

11. Hardener: Possible film hardener

12. Hexane: Methyl Isobutyl Ketone: $(CH_3)_2\ CHCH_2\ COCH_3$, used as a paint solvent

13. Kodak Developer: Photographic developer, normally composed of sodium sulfite, sodium carbonate, and hydroquinine

14. Kodak Fixed: Photographic fixing bath normally containing sodium thiosulfate acetic acid, and sodium sulfite

15. Liquid Fix: Photographic fixing agent

16. Methyl Cyclohane: Possibly methylcyclohexane

17. Neutra - Clean: Film Cleaner

18. Oxosorbent: Possibly used as a catalyst in the production of alcohols, aldehydes, and other oxygenated organic compounds.

19. Perchlore; Possibly Perchlor Brand name for perchloroethylene

20. Platinum Paper developer: Photographic developer

21. Pydraul: Hydraulic oil (non-PCB)

22. Quick Fix: Photographic fixing bath

23. **Skydrol:** Trademark for a line of fire-resistant aircraft hydraulic fluids. Phosphate ester base fluid (non-PCB)

24. **Toner,** Possibly graphic copying machine fluid

25. **Triethylene Tramine:** Possibly diethylene - Triamine - $NH_2\ C_2\ H_4\ NHC_2\ H_4\ NH_2$

26. **Versatol Developer:** Photographic developer

27. **Wet-edge:** Petroleum fraction used as a degreaser